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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/596,464 | 06/06/2007 | Hanns-Ingo Maack | DE030425US1 | 6947 |
| 24737 7590 04/10/2009 PHILIPS INTELLECTUAL PROPERTY & STANDARDS P.O. BOX 3001 BRIARCLIFF MANOR, NY 10510 | | | | |
| EXAMINER | | | | |
| BITAR, NANCY | | | | |
| ART UNIT | | PAPER NUMBER | | |
| 2624 | | | | |
| MAIL DATE | | DELIVERY MODE | | |
| 04/10/2009 | | PAPER | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/596,464

Applicant(s)

MAACK, HANNS-INGO

Examiner

NANCY BITAR

Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 29 December 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 December 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/5508)
- _____ Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
- _____ Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's response to the last Office Action, filed 10/02/2008, has been entered and made of record.
2. Claims 1-10 are currently pending.
3. Applicants arguments filed 12/29/2008 have been fully considered but they are not persuasive.
4. Applicant argues that the rejection of claim 10 under 35USC 101 must be withdrawn because the program in claimed 10 satisfies the conditions stated in *In re Bilski* in that "it is tied to a particular machine and transforms a particular article into a different state or thing." It is true that the method is tied to an image processing device and transforms an x-ray image to a display image but the examiner did not reject claim 10 as being not tied to a particular machine or apparatus, or does not transform a particular article to a different state or thing. But instead, Claim 10 has been rejected in the nonfinal rejection dated 10/2/2008 as being directed to non-statutory subject matter as follows. Claim 10 defines a "computer program" embodying functional descriptive material. However, the claim does not define a computer-readable medium or memory and is thus non-statutory for that reason (i.e., "When functional descriptive

material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized” – Guidelines Annex IV). That is, the scope of the presently claimed “a computer program” can range from paper on which the program is written, to a program simply contemplated and memorized by a person. The examiner suggests amending the claim to embody the program on “computer-readable medium” or equivalent in order to make the claim statutory. Therefore, the 35 USC 101 rejection is still being maintained by the examiner. Moreover, Applicant argues that Rogers et al does not teach “the part-images are arranged in the display image in a spatially separate manner” as recited in independent 2 and independent claim 1 states that “creating a display image from an x-ray image in which at least two spatially separate objects are displayed”. In response, Examiner disagree that Rogers does not teach the images are arranged in spatially separate manner and refers to the clustering of Rogers et al and figure 31 and columns 5 lines 62-column 8, lines 1-57, and figure 11. Moreover, one can select to arrange the images spatially in order to help in reducing the size of the displayed image. All remaining arguments are reliant on the aforementioned and addressed arguments and thus are considered to be wholly addressed herein.

Examiner Notes

5. Examiner cites particular columns and line numbers in the references as applied to the claims below for the convenience of the applicant. Although the specified citations are representative of the teachings in the art and are applied to the specific limitations within the

individual claim, other passages and figures may apply as well. It is respectfully requested that, in preparing responses, the applicant fully consider the references in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the examiner.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:

Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.

When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and *Warmerdam*, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).

In contrast, a claimed computer-readable medium encoded with a computer program is a computer element which defines structural and functional interrelationships between the computer program and the rest of the computer which permit the computer program's functionality to be realized, and is thus statutory. See Lowry, 32 F.3d at 1583-84, 32 USPQ2d at 1035.

6. Claim 10 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claim 10 defines a “computer program” embodying functional descriptive material. However, the claim does not define a computer-readable medium or memory and is thus non-statutory for that reason (i.e., “When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized” – Guidelines Annex IV). That is, the scope of the presently claimed “a computer program” can range from paper on which the program is written, to a program simply contemplated and memorized by a person. The examiner suggests amending the claim to embody the program on “computer-readable medium” or equivalent in order to make the claim statutory. Any amendment to the claim should be commensurate with its corresponding disclosure.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-10 are rejected under 35 U.S.C. 102 (b) as being anticipated by Rogers et al (US 6,091,841).

As to claims 1 and 2, Rogers et al teaches an image processing device for creating a display image from an X-ray image in which at least two spatially separate objects are displayed (FIGS. 2 and 3, a digital mammogram image 190 is first cropped to segment an analysis region 296 from the image and produce a binary mask 298 corresponding to breast tissue in the analysis region. Preferably, the cropping is performed automatically, although it could be cropped manually, column 4, lines 62-67; claim 1), wherein part-images which show the objects are determined in the X-ray image and the part-images are arranged in the display image in a spatially separate manner, wherein the size of the display image is such that the part of the display image that is free of the part-images is smaller than the corresponding part of the X-ray image (claims 12-14; column 5, lines 20-49). Note that one can arrange the part-images in a "spatially separate manner" by constituting just one of several straightforward possibilities from which one skilled person would select, in order to reduce the size of the displayed image. Moreover, Rogers teaches the potential micro calcifications are thresholded, clusters are detected, features are computed for the detected clusters, and the clusters are classified as either suspicious or not suspicious by means of a neural network. Thresholding is preferably by sloping local thresholding, but may also be performed by global and dual-local thresholding. The locations in the original digital mammogram of the suspicious detected clustered micro calcifications are indicated. Parameters for use in the detection and thresholding

portions of the system are computer-optimized by means of a genetic algorithm. Moreover Roger clearly explains cropping means for cropping the digital mammogram image to the largest rectangle that just encloses the digital mammogram pixels corresponding to the dilated mask and segmenting an area of a digital mammogram image corresponding to breast tissue from the remainder of the image by using an image enhancement means for enhancing the digital representation to produce an enhanced image in which the contrast of the area of the mammogram image corresponding to breast tissue is increased; and a thresholding means for thresholding the enhanced image to produce a binary image comprising a seed pixel; and a region growing means for region growing the seed pixel in the binary image to produce a mask and a cropping means for cropping the digital representation to the size of the largest object in the mask (column 4, lines 62-column 5, lines 49).

As to claim 3, Rogers et al teaches an X-ray device as claimed in claim 2, wherein in each case the same surface area of the X-ray image detector is exposed to X-ray radiation as the X-ray images are being created (normalizing the brightness values of the pixels in said digital mammogram image to produce a normalized image, claim 6-8).

As to claim 4, Rogers et al teaches an image processing device as claimed in claim 1, wherein the part-images are spaced a minimum distance apart in the display image (Range of points in cluster calculated as maximum interpoint distance minus the minimum interpoint distance, column 11, lines 30-62)

As to claim 5, Rogers et al teaches an image processing device as claimed in claim 1, wherein the X-ray images are mammography X-ray images (a digital mammogram image, 190, figure 2 and 3).

As to claim 6, Rogers et al teaches an image processing device as claimed in claim 1, wherein one of the objects shown is a marker (label, figure 3 and column 14, lines 31-59).

As to claim 7, Rogers et al teaches a method of creating a display image from an X-ray image, comprising the following steps: a) determining part-images, which each show an object, in the X-ray image (digital mammogram image 190 is first cropped to segment an analysis region 296 from the image and produce a binary mask 298 corresponding to breast tissue in the analysis region, column 4, lines 62-column 5, line 8, b) arranging the part-images in the display image in a spatially separate manner (figure 13, c) dimensioning the size of the display image such that the part of the display image that is free of the part-images is smaller than the corresponding part of the X-ray image (cropping means for cropping said digital representation to the size of the largest object in said mask; claims 12-14; column 7, lines 8-26).

As to claim 8, Rogers et al teaches a method as claimed in claim 7, comprising the further step: d) filling the part of the display image that is free of the part-images with image information from the part of the X-ray image that is free of the part-images (claim 8, hole closing means for closing holes in the region grown mask to produce a closed mask, column 7, lines 27-64).

As to claim 9, Rogers et al teaches an image processing device as claimed in claim 1, wherein in order to determine the part-images use is made of a segmenting method in which the image values of the part of the X-ray image that is free of the part-images are determined and a coherent image area which contains mainly pixels with these image values is determined in the X-ray image (column 5, lines 20-49; note that sub sampling every eight pixel in both horizontal and vertical directions reduces the amount of data) .

The limitation of claim 10 has been addressed above.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NANCY BITAR whose telephone number is (571)270-1041. The examiner can normally be reached on Mon-Fri (7:30a.m. to 5:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vikram Bali can be reached on 571-272-7415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nancy Bitar/
Examiner, Art Unit 2624

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